

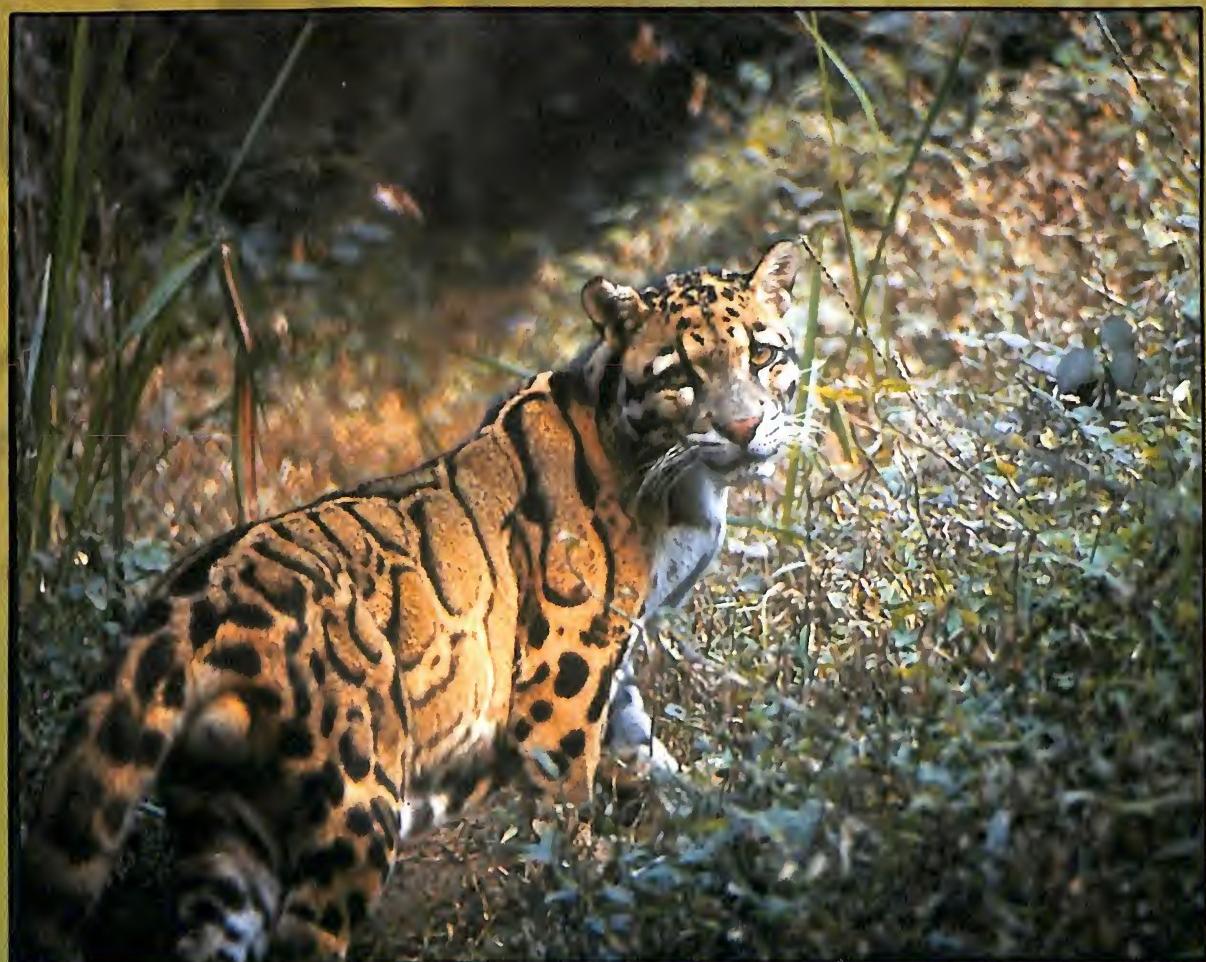
Newsletter No. 4



THE RHINO FOUNDATION

FOR NATURE IN NE INDIA

June 2002



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Newsletter No. 4 • June 2002

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Publications of The Rhino Foundation:

- Survey of wildlife in Bherjan, Borajan & Podumoni RFs with a proposal for a wildlife sanctuary.
- Survey of White-winged wood duck and the Bengal florican in Tinsukia district & adjacent areas.
- Dhansiri Tiger Reserve. Revised proposal. • Birds of Nongkhylliem. • Newsletters, No.1 (1996), No.2 (1998), No.3 (2001). • Two posters on conservation.

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COVER : Clouded leopard *Neofelis nebulosa*. This rare cat is in danger due to habitat loss and poaching for its beautiful pelt. Its Indian population is confined to north-east only.

(Photo: ANWARUDDIN CHOWDHURY)

The Rhino Foundation for nature in NE India, 2001-02

ANWARUDDIN CHOUDHURY
Honorary Chief Executive

The Rhino Foundation for Nature in North East India has continued its conservation activities as a leading non-governmental organisation (NGO) of the country.

In the eight years of its existence (founded in 1994), the Rhino Foundation has worked for the conservation of wildlife in northeastern India. The Rhino Foundation's aim is to maintain sustainable use of natural resources for a healthy development of future generations. The foundation appeals for support for this important cause from all concerned.

With the Indian one-horned rhinoceros *Rhinoceros unicornis* as its flagship species, the foundation's objectives include all the endangered species.

Projects

The projects undertaken and completed since its inception were explained and listed in details in the last issue of this newsletter (No.3, June 2001; pp. 1-5) and are also summarised here in Table 1.

During the last year, the Rhino Foundation has undertaken conservation projects in the protected areas and their fringes in Assam. Elsewhere in northeastern India, a network has been established

with other NGOs as well as governmental agencies, which are in regular contact. The foundation is anxious to take up projects in other states.

The main project launched last year was veterinary care for the patrolling elephants in different protected areas of Assam. This was supported by United States Fish & Wildlife Service under its Asian Elephant Conservation Fund. The camps organised in the first phase and other details are given in Table 2. The role of domesticated elephants, which patrol against poachers in the protected areas is well known. But often these animals do not get adequate veterinary care due to lack of resources. The veterinarians who participated in the camps were members of Early Birds, a Guwahati-based NGO with a background of similar activities.

During the year, some wireless equipment of Orang National Park was repaired through SIMOCO, Kolkata, which included three main sets and eight handsets.

Table 1: Major Projects completed/ongoing

SI No.	Name	Year	Remarks
1.	Field staff equipment	1995-96	Funding: Own sources. Completed.
2.	Eco-development	1995-96	Funding: Own sources. Completed.
3.	Repairing of wireless, Reward, etc	1995-96	Funding: Own sources. Completed.
4.	Forest Guard Equipment	1997-98	With support from Rhino & Tiger Conservation Fund (RTCF) of United States Fish & Wildlife Service (USFWS). Completed.
5.	Post-flood emergency assistance	1998	With support from Rhino Rescue Trust, UK. Completed.
6.	Aid to Kaziranga (repairing of countryboats)	1998	With support from WWF-Tiger Conservation Programme (TCP). Completed.
7.	Wireless Systems	1998-2001	With support from RTCF of USFWS. Completed.
8.	Motorcycles	1999-2000	With support from Fauna & Flora International, UK. Completed.
9.	Support to Orang NP	1999-2001	With support from WWF-Tiger Conservation Programme (TCP). Completed.
10.	Support to Nameri NP	1999-2001	With support from WWF-TCP. Completed.
11.	Veterinary camp for patrolling elephants	2001-02	With support from Asian Elephant Conservation Fund (AECF) of USFWS. Ongoing.
12.	Survey of birds and mammals of Debang-Dihang Biosphere Reserve	2002-05	With support from Ministry of Environment & Forests, Government of India. Will start soon.

Table 2: Veterinary camp for patrolling elephants

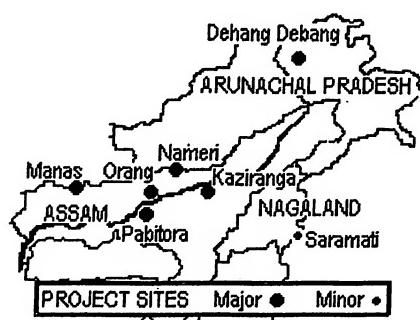
Protected Area	Date of camp	No of elephants Treated/examined	No of veterinarians involved	Remarks
Kaziranga NP	-	-	-	Tentatively in September
Manas NP	3-5 February 2002	26	3	2 nd phase later in the year
Nameri NP	19-21 January 2002	13	3	2 nd phase in June 2002
Orang NP	5-7 January 2002	13	3	2 nd phase in May-June 2002
Pabitora WS	29-30 December 2001	7	3	2 nd phase in May-June 2002
TOTAL		4	59	4

One Rajdoot motorcycle was donated to Nameri National Park.

A project to carry out a faunal survey in Dibang-Dihang Biosphere Reserve in Arunachal Pradesh was sanctioned by Ministry of Environment and Forests, Government of India. The field works for this project will start once the monsoon is over. The focus of this survey will be documentation of birds and mammals of this poorly known tract.

The projects completed so far (see Table 1) had certainly played a key role in strengthening anti-poaching network and also enhance the morale of the patrolling staff. A number of other NGOs, both from within India and abroad had also contributed during the same period. This along with continued governmental support had yielded excellent results. Orang National Park, which witnessed high poaching (around 10 per year) between 1995 and 2000, had only one rhino poached in 2001. In Pabitora also, it was well under control. In Kaziranga, gone are the days when up to 49 was poached in a single year. But it should be kept in mind that there should not be any room for complacency as poachers are always ready to strike at any opportune moment and the examples of Laokhowa and Manas are still fresh.

Appendix 1 and 2 lists some of the main items donated and also construction works by this foundation for quick reference.



Indian Board for Wildlife

The Government of India [vide its letter No. F.No. 6-2/2000 WL -I dated 11 December 2001] has nominated the Rhino Foundation for nature in NE India as one of the members of this national board, which is the highest such body in the country and is chaired by the Prime Minister of India. Other NGOs nominated were Bombay Natural History Society, Mumbai; WWF-India, New Delhi; Centre for Environment Education, Ahmedabad, and the Centre for Ecological Sciences, Bangalore.

Other activities

Networking. The foundation has maintained its network with different governmental agencies, NGOs and individuals across the NE India. A project in Arunachal Pradesh has already been initiated.

Awareness, Motivation, etc. The honorary Chief Executive (CE) had delivered a number of popular talks with slide-shows and also distributed posters across the northeast. Informal meetings with villagers as part of awareness campaign were also held in some remote areas such as Saramati and Shilloi near India-Myanmar border in Nagaland, Chayangtajo and Bameng in Arunachal Pradesh.

IUCN/SSC Asian Elephant Specialist Group. The foundation is also in touch with this important group through its honorary CE who was inducted as a member during the last year. Similar contacts are also with other such Specialist Groups such as the Asian Rhino; Cat; Threatened Waterfowl; Waterbird; Pheasant, and Mustelid, Viverrid & Herpestid. The Foundation's Chairperson, Mrs Anne Wright MBE is a Member of the Cat Specialist group.

The honorary CE has been invited to attend a meeting of the IUCN/SSC Asian Elephant Specialist Group held at Phnom Penh, Cambodia in the last week of May 2002.

Permanent rumble strips near Kaziranga. Every year a large number of animals are crushed to death by speeding vehicles on NH 37 when they try to cross to and from Kaziranga National Park. The casualty increases during monsoon when the park reels under water but a few dies round the year. However, no measure was taken to check this except for some temporary steps during the floods. When a tigress was killed on 21 March 2002, the foundation had decided that something must be done. The Secretaries to the Government of India, Ministry of Tourism and Ministry of Road Transport & Highways were approached for permanent rumble strips on NH 37 at suitable locations (animal movement corridors). Although such speed breakers are not allowed in the National Highways, considering the global importance of Kaziranga and the plight of the endangered species as explained by the foundation (the Chairperson had personally met them), the Government of India was kind enough to allow permanent rumble strips vide their letter No. NH-12037/59/2002-AS/NH-10 dated 27 May 2002.

World Heritage Meet. The honorary CE had attended the 'Planning workshop on enhancing our heritage : monitoring & managing for success in world natural heritage sites' held at Bharatpur, Rajasthan on 21-23 November 2001. The meeting was jointly organised by UNESCO, IUCN, the University of Queensland, United Nations Foundation, The Nature Conservancy and the Wildlife Institute of India.

Acknowledgements

The Trustees of the Rhino Foundation for their continuing support. The US Fish & Wildlife Service and the Ministry of Environment & Forests, Government of India for their support, which enabled project activities in the field. Government of India Secretaries, Rathi Vinay Jha of Ministry of Tourism and Ashoke Joshi of Ministry

of Road Transport & Highways, and V.K.Rajawat, Executive Engineer for their support in providing rumble strips near Kaziranga.

We are grateful to David Fergusson, Fred Bagley and Carl Stromeyer of US Fish & Wildlife Service, and S. S. Bist, Director, Project Elephant, Government of India. The support and assistance of the following are also gratefully acknowledged: in Assam, Pradyut Bordoloi, Minister; B. B. Hagjer, Secretary, Forest; S. Doley, CCF (wildlife); D. M. Singh, Director of Kaziranga; A. Rabha, Field Director of Manas; Vasist, R. K. Das, D. Zaman, H. P. Phukan, P. S. Das, P. K. Hazarika (all DFOs); Dharanidhar Boro, Mrigen Barua, L. K Ramchhary (all Range Officers) and other staff of the forest department posted in different protected areas.

In Meghalaya, we are grateful to T. Deb Roy and B. K. Lyngwua (both DFOs), Khasi Hills. In Arunachal Pradesh, we thank S. N. Kalita, CCF (WL) and C. Loma (DFO). In Mizoram, N. Pradhan (ACF), R. Sangkhama (Range Officer) and M. Goswami.

For their continued support, we thank Ranjit Barthakur, Moloy Baruah of Early Birds, Anil Goswami and Tariq Aziz of WWF, Bibhab Talukdar, Firoz Ahmed, Rathin Barman, Bibhuti Lahkar, and Rajib Tariang of Aaranyak, Kulojyoti Lahkar, Tridib Phukan of Assam Bhoreli Angler's Association, Joynal Abedin of Dibrugarh-Saikhowa Wildlife Society, Saumyadip Datta and Sangram Jit of Nature's Beckon, Lutfur Rahman and others of Assam Co. Ltd., Dr R. K. Ranjan Singh of MASS (Imphal), Samir Khan, Khekiho Sohe and Thomas Kent of People's Group (Nagaland), Abdul Rashid of Orang, Numaligarh Refinery, Ltd., and the Wildlife Protection Society of India.

Lastly, the small staff of the Rhino Foundation based at Guwahati and Kolkata whose untiring efforts ensure that the work is being completed with success. □

Appendix 1: Donation and construction of some major items since 1995

Protected Area	Motor-cycle	Motor-boat	Country-boat	AP Camp	P. Path	Wireless Mainset	Wireless Handset	Solar Charger	Battery Charger	TL
Kaziranga NP	1	-	-	-	-			-	-	5
Nameri NP	1	-	-	1	27 km	-	-	-	-	-
Orang NP	2	2	5	4	-	3	16	10	8	
Pabitora WS	2	-	-	-	-	2	9	5	5	3
TOTAL	6	2	5	5	27 km	5	24	15	13	8

AP Camp= construction of anti-poaching camp; P. Path= laying of patrolling path; TL= tarpaulin (50'x12' sheets).

Appendix 2: Donation of some other items since 1995

Protected Area	1	2	3	4	5	6	7	8	9	10	11	12	13
Barnadi WS	-	-	-	-	-	-	4	-	-	-	-	-	-
Burhachapori WS	90	90	-	-	90	30	5	-	-	-	-	-	-
Dibru-Saikhowa NP	-	-	-	-	25	-	5	-	-	-	-	-	-
Kaziranga NP	800	550	-	-	1090	250	171	50	130	-	4187	-	-
Laokhowa WS	60	60	-	-	60	30	5	-	-	-	-	-	-
Manas NP	300	300	-	-	300	90	20	-	--	-	-	-	-
Nameri NP	-	-	-	-	111*	-	5	-	-	-	-	-	-
Orang NP	100	100	90	90	300	60	25	-	-	71	-	3	3
Pabitora WS	165	100	-	-	183	60	30	13	25	4	1102	3	-
TOTAL	1515	1200	90	90	2159	520	266	63	155	75	5289	6	3

1= raincoat; 2= warm jersey; 3=jacket; 4=uniform (pairs); 5= huntingboot (pairs); 6= haversack; 7= drinking water-filter; 8= water-filter candle; 9= hurricane lantern; 10= torchlight; 11= torch battery; 12= wireless antennae; 13= extra wireless battery.

* = shared between Nameri and Burhachapori.

Fire-crackers were also donated to Pabitora for anti-depredation activities.

Moloy Bonnah



Bhaskar Choudhury



Patrolling elephants are being treated at Orang (top) and Pabitora (bottom).

Briefly

(Compiled by Anwaruddin Choudhury)

MLA detained for burning camp

Praneswar Basumatary, an honourable Member of Assam Legislative Assembly was detained by police when he alongwith supporters set on fire the Rangajan *Chapor* anti-poaching camp inside Assam's Nameri National Park in the morning of 28 April 2002. A case has been registered in the Rangapara Police Station (No. 74/2002 under section 147/148/149/353/447/436 and 506 of the Indian Penal Code. The MLA was interfering in the eviction drive against encroachers in the national park. It may be mentioned here that almost the entire forest belt of northern Sonitpur has been encroached upon during the last half-a-decade with political motive. The loss of this extremely important elephant habitat has resulted in severee man-animal conflict leading mass poisoning of elephants (see below). The encroacers have already taken control of a third of Sonai-Rupai Sanctuary and the next target could be Nameri.

This incident involving an honourable MLA has been condemned by all section of people who also demanded strong legal action against him and also eviction of all encroachers.

(Source: Aaranyak; Amar Asom 29-30 April; Dainik Pratidin 29-30 April 2002).

'Mass' poisoning of elephant

More than 20 wild elephants *Elephas maximus* were poisond to death by some unknown miscreants in Assam's Nameri National Park and other areas of Sonitpur district. Some more had died at the same time in the adjacent Pakhui Wildlife Sanctuary of Arunachal Pradesh. Although man-elephant conflict is a familiar phenomenon in Assam such systematic and well organised poisoning of large number of elephants was first such instance. It is believd that some villagers in connivance with miscreants had used Demecron, an 'organophosphorus' pesticide to kill the elephants as a retaliatory act against crop raid.

Such killing could be a serious problem in future as the poachers, who are after the tusk and dry meat might engage villagers to poison with the pretext of saving crops! With politically motivated encroachment all over the elephant

habitat in Sonitpur, there is no end to this problem in sight. Moreover, the authorities have failed to apprehend a single culprit so far despite call from all walks of society.

Manas

Manas, among the finest national parks of the country, a world heritage site, a project tiger reserve and a biosphere reserve continued to suffer although more than 4000 visitors including a few foreigners had made their way inside during the winter of 2001-02. This was a welcome sign considering the previous years when hardly any tourist was allowed inside on 'supposed' threat. The park is still in need of minimum-armed security. The conservation activisits all around were rather surprised at indifferent attitude of the authorities towards a world heritage site, which has already witnessed virtual elimination of its entire rhino and swamp deer populations.

Tiger census

In March 2000, a census of the tiger *Panthera tigris* was conducted by the forest department with participation from NGOs, conservationists, etc., in Assam. The main methodology followed was pugmark count. The total tigers estimated was 354, which included 142 males, 169 females and 39 cubs. The most interesting find was re-appearance of tigers in Hollongapar [Gibbon Sanctuary], Jorhat district after more than a decade. The population in some of the key protected areas was as follows:

Dibrugarh National Park . . . 31

Kaziranga National Park . . . 85

Laokhowa Sanctuary . . . 11

Manas National Park . . . 65

Nameri National Park . . . 26

Orang National Park . . . 19

Sonai-Rupai Sanctuary . . . 12

Pygmy hog rescued

The volunteers of Green Manas, an NGO based near Manas National Park had rescued three piglets of the endangered pygmy hog *Sus salvanius* from a villager on 8 May 2002. The piglets were caught from Bhuyanpara range area when some villagers went inside for fishing. (Source: Niranjan Barman in Amar Asom 18 May 2002).

Rhino poaching in Gohpur

A rhino was killed by poachers in Gopalpur jaroni near Gohpur, Sonitpur district on 17 March 2002. One person was arrested. The animal had strayed from Kaziranga National Park.

Tiger killed

A full-grown tiger was killed by 'security' personnel at Lailuri near Samaguri in Nagaon district of Assam in mid-January 2002. (Source: The Telegraph 18 January 2002).

Tiger crushed

A full-grown tigress was crushed to death by a speeding vehicle while it was crossing the NH 37 near Kaziranga National Park's Panbari sector in the wee hours of 21 March 2002.

Tusker poached

A tusker was shot dead and its tusks taken in Manas National Park's Kahitema Beat area on 14 January 2002. Although the present field director is making all out efforts to improve but lack of armed guards inside has added to the problems.

Elephant electrocuted in Tripura

An elephant was electrocuted in Balurchara in Teliamura police station area of West District in November 2001. Such loss from a fast vanishing population of this state is alarming. It could be a case of poaching also.

Encroachment in Dibru-Saikhowa

Dibru-Saikhowa National Park (340 km²) in eastern Assam has continued to face threats from the Forest Villagers, especially of Dadhia Forest Village who have cleared a large chunk in Tongkrong area of the park. Conservationists have demanded immediate eviction to save the park.

Elephant census in NE states

An interstate elephant census was conducted in Assam, Arunachal Pradesh and Meghalaya in March-April 2002. The results are awaited. This census was significant in view of continued decrease in elephant population in northeastern India due to poaching, many of which go unreported.

Saramati expedition

Saramati, 3800m, the highest mountain peak in the subcontinent, south of the Himalaya was an

unexplored tract. S. Dillon Ripley, renowned ornithologist and Salim Ali's co-author in *Handbook of Birds* wanted to explore the area in 1950s but was denied access. Subsequently no attempt was made due to difficult terrain and insurgency.

An expedition was organised in October 2001 in which Dr Anwaruddin Choudhury of the Rhino Foundation, and Thomas Kent and Khekiko Sohe of Peoples Group had participated. Excellent subtropical and temperate broadleaf forest occurs in the slopes while the peak is barren with short grass (because of snowfall in winter). Presence of slow loris, stump-tailed macaque, capped langur, hoolock gibbon, dhole, black bear, sun bear, tiger, leopard, clouded leopard, gaur, Rufous-necked Hornbill, Blyth's Tragopan, Mrs Hume's Pheasant among many others were confirmed. Many of the older people are not unfamiliar with the Sumatran rhinoceros. Entire Saramati area should be accorded protection status may be as a biosphere reserve.

Good news from Mizoram

About a thousand families belonging to Mizo, Chakma and Reang (Bru) villagers were provided with LPG cylinders to reduce pressure of fuel wood on Dampa Tiger Reserve. This innovative scheme could be an eye-opener for many other protected areas in the region. Two new sanctuaries have been declared in 2001, these were Palak and Thorang.

Bird Census training workshop

A training workshop on techniques of bird census was held at NEIBM, Guwahati in 29-31 March 2002 with 35 participants. The workshop was jointly organised by the Bombay Natural History Society and Aaranyak. The programme was inaugurated by Dr Anwaruddin Choudhury, IBCN Coordinator for the North-East. Dr Asad Rahmani, Director of Bombay Natural History Society and Steve Parr, International Officer of the Royal Society for Preservation of Birds, UK had joined the participants on 30th and demonstrated bird banding techniques. (Source: Aaranyak).

A poaching free year in Orang

Since May 2001, there was no poaching of rhino in Assam's Orang National Park. In fact in 2001, only one rhino fell to poachers. Thanks to sincere efforts of the field staff and active support from police and significant inputs from NGOs such as Rhino Foundation and WWF-TCP (see pp.1-4).

Conservation of Elephants in NE India: Past, Present and Future

S. S. BIST*

The north-eastern [NE] region of India occupies a special place in the context of the conservation of elephants in the country. Of the 28,000 wild elephants in the country, as many as 33% are in the north-east. In fact, Assam alone accounts for more elephants than Myanmar, Thailand, Indonesia or any other country in Asia. The NE India also possesses 56% of the total number of domesticated elephants, 37% of elephant habitat and 35% of the recorded elephant corridors in the country. Of the 25 designated Elephant Reserves in the country, nine are in the north-east.

The NE region is also remarkable for the contribution that it has made towards the knowledge about elephants. This region has a long history of capturing and managing elephants. The great Indian epic, the *Mahabharata*, contains one of the earliest references to the use of elephants in warfare. Bhagdatta, the ruler of Pragjyotishpur, an ancient kingdom in Assam, had participated in this war with hundreds of elephants. One of the great mythological characters in south India is that of the sage Palakapya, the author of *Gajasastra* and Matanglila, who is credited with introducing the art of capturing and treatment of elephants in south India. Interestingly, Palakapya is said to have been born in Assam and he spent his childhood in the eastern Himalayas wandering with the wild elephants, sharing their food and learning about them. In the 18th century, Sukumar Borkayat wrote the famous Assamese treatise called *Hasti-Vidyarnava*, on instructions from the then Ahom queen.

Two of the classical methods for capturing wild elephants in the country, namely *Mela Shikar* and *Khedda*, were evolved in the NE. In the 19th century, the great elephant catcher Sanderson spent some years in Assam and Chittagong hills to learn the intricacies of *Khedda* and used the same in south India. He also took with him many skilled *phaandis* from the NE whose descendants are still there in Karnataka. In the twentieth century, Milroy and Stracey, two eminent forest officers of Assam, contributed a great deal to our knowledge of elephants in wild as well as in captivity. Milroy's book on management of elephants in captivity, first

published in 1922, was one of the earliest books written on this subject.

Influence of the NE is also visible on the words of command for elephants used by *mahouts* in the northern and the eastern India, which are similar to those used in Assam. *Mahouts* and *phaandis* of the NE have been visiting other parts of the country sharing their expertise with the local *mahouts*. The forest officers of West Bengal still remember with great respect the name of Prakritesh Barua or Lalji — the scion of Gauripur family, who spent many years of his life in north Bengal. His daughter Parbati Barua has also earned international recognition for her work with elephants. Elephant experts from Assam visited Malaysia in the late seventies and again in the mid-eighties to impart the skill of *Mela Shikar* to the *mahouts* there.

We often take pride in the fact that elephants form part of our culture. But truly speaking, we do not see this cultural influence of elephants as prominently anywhere as in the NE. Nowhere in the country, there are so many folklores and folk songs about elephants as in the NE. The children in this part of the country grow up seeing elephants and listening to the stories and songs based on the wonderful bond between the humans and the elephants.

Unfortunately, the present scenario of elephant conservation in the NE is in complete contrast to its glorious past. While the elephant population is increasing in other parts of the country, it is going down in the NE. The elephant population has decreased in Assam from 5524 in 1993 to 5312 in 1997; in Arunachal Pradesh from 2102 in 1993 to 1607 in 2001; in Meghalaya from 2872 in 1993 to 1840 in 1998; and in Nagaland from 256 in 1980 to 147 in 1999. Barail-Saiphung (Assam-Meghalaya), was recognised as an Elephant Reserve in 1991 by Government of India but had to be discarded as very few elephants are left in that area. There has been serious decline in the elephant population in

While the elephant population is increasing in other parts of the country, it is going down in the NE.

central Assam whereas those in the southern parts has virtually vanished. Elephant population has seriously declined in Tripura and there are only a few left in Manipur and Mizoram.

Another issue of great concern in NE India is the heavy loss of prime elephant habitats. Between 1991 and 1999, the Forest Survey of India has recorded a decrease of about 1800 km² in the forest cover in the states of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland. Encroachments and deforestation were the major factors. But the actual loss may be much more. On the north bank of Brahmaputra alone, about 1500 km² of forest area is estimated to be under encroachment. Large elephant habitats in southern Golaghat and Merapani have already been lost. Yet another

Another issue of great concern with regard to the NE India is the heavy loss of prime elephant habitats. Between 1991 and 1999, Forest Survey of India has recorded a decrease of about 1800 km² in the forest cover...

serious problem in NE is that of *jhum* or shifting cultivation. Strictly speaking, *jhum* with longer cycles is not harmful for elephants as the secondary growth that comes in the abandoned fields is greatly relished by elephants. But increasing human population and decreasing soil fertility has led to a situation where *jhum* cycle has become much shorter and elephants are virtually on the run every where. In Garo Hills, the maximum human-elephant conflict takes place in *jhums*. In Nagaland, large tracts of bamboo are burnt every year for *jhum*. It is a typical example of burning millions of rupees to earn a few thousand. In fact, it is not only the elephants but also the people themselves who are the victim of such outdated agricultural practices.

The areas with maximum deforestation are also the ones having maximum human-elephant conflict. So, it is not surprising that 43% cases of the human deaths caused by elephants in the country take place in the NE. Around 20% cases of poaching of tuskers for ivory are also reported from NE, but this is an official figure. There are reasons to believe that many more cases go undetected. The NE also accounts for 90% of the cases of poisoning of elephants, 30% of the cases of electrocution, and 60% of the cases of elephants being run over by



Apurba Chakravarty

Carcass of an elephant killed by poisoning in Sonitpur district.

trains. In fact, nothing has defamed the elephant management in the NE more than the large-scale poisoning of elephants in Sonitpur last year. There are many elephant experts in the country who feel that elephants do not have any future in the NE.

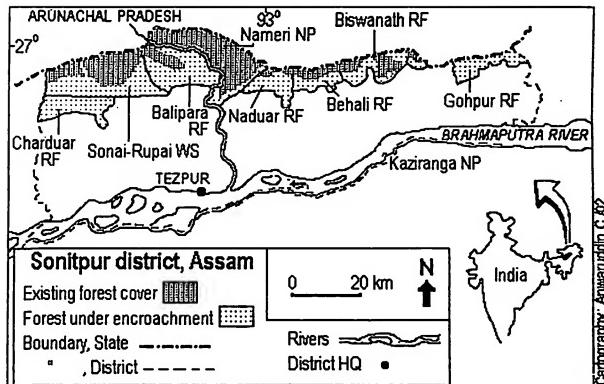
What is wrong with the management of elephants in the NE? In fact, the poor status of elephants is symbolic of the poor status of forests and forestry in the region. The NE region has witnessed a long spell of insurgency and poor financial condition of the state governments. In the prevailing law and order scenario, deforestation and encroachments in forest have received only a cursory attention of the politicians, administrators, public as well as the media. But what is not even being talked about is the adverse impact of the current political and economic conditions on the efficiency of the forest administration. Forests and wildlife have not been a priority with the state governments as can be seen from the very poor investment in forestry sector as compared to other

... 20% cases of poaching of tuskers for ivory are ... from NE. There are reasons to believe that many more cases go undetected. NE ... accounts for 90% of the cases of poisoning of elephants, 30% of electrocution, and 60% of ... run over by trains. In fact, nothing has defamed ... the NE more than the large-scale poisoning of elephants in Sonitpur last year.

sectors. The forest departments in all the states suffer from lack of manpower and poor infrastructure. Large-scale vacancies exist among the frontline staff. The jurisdiction of the local forest officers is often too large to be effectively patrolled, more so in the absence of any conveyance, patrolling tracks, camps, weapons, wireless sets and other basic amenities. The forest officials generally have to stay in difficult and remote areas — away from their families and with a very high cost of living. The problem is often complicated by considerable delays in disbursement of salaries and wages of the staff and lack of funds for travelling expenses. This invariably breeds frustration among the forest officials and kills their initiative. To a great extent, it also affects the morale and discipline of the forest officials. The senior officers find it difficult to enforce the line of command and to perform their supervisory functions. In such a scenario, most of the forest officials tend to become insensitive to various aspects of forestry including conservation of elephants. This kind of atmosphere is also not conducive to promoting the technical knowledge within the forest department.

The fact remains that the NE states at present receive a large amount of financial assistance from Government of India for conservation of forests and wildlife including special funds for conservation of elephants under Project Elephant. Yet, the field situation remains gloomy in view of the general insensitivity and lack of technical competence among most of the forest officials, induced by years of administrative neglect. As a matter of fact, the state forest departments of the region generally find it difficult to make full utilisation of the central funds earmarked for wildlife conservation.

The incident of mass poisoning of elephants in Sonitpur in 2001 provides a case study of the insensitivity and technical handicap that generally characterises the forest administration in the NE. Although the first elephant carcass was detected in Nameri Tiger Reserve on 2nd July, yet it was not before the mid-August (by which time as many as nine carcasses had been detected) that the state forest department took notice of the incidents and sent senior officers to visit the field. There were also reports from among the field staff that 8-9 elephants were found dead in the adjoining territorial division sometimes in May, which were not even brought on record! The field officers made no attempt to detect the carcasses soon enough and to get the post-mortem done by the veterinary experts



Cartography: Anubuddha CRZ

well in time to ensure correct diagnosis. A strange excuse advanced by some officials in the press was that it was not possible for them to detect the carcasses in time in the absence of vultures! The result of this quixotic approach to detection of carcasses was equally curious: the death of elephants was first ascribed to liver fluke, then to anthrax and finally to demecron — a poison. Some forest officers went to the press claiming to have sent emergency messages to Government of India seeking help for “controlling liver fluke”. This was

The incident of mass poisoning of elephants in Sonitpur in 2001 provides a case study of the insensitivity and technical handicap that generally characterises the forest administration in the NE. Although the first carcass was detected in Nameri on 2nd July, yet it was not before the mid-August (by which time as many as nine carcasses had been detected) that the state forest department took notice of the incidents and sent senior officers to visit the field.

not at all true. Moreover, liver fluke is not an epidemic for which Government of India's help is needed. It is obvious that a valuable time was lost in this process which delayed any fruitful criminal

investigation and institution of preventive measures. There is yet another evidence of the insensitivity and lack of technical knowledge among the forest officials. Despite the fact that anthrax was believed to be the most plausible cause of death of the four elephants whose carcasses were detected in the first week of August, there was no attempt for a number of days to dispose them off and sanitize the area. Some of the forest officials were telling the visitors with apparent pride that they had seen a tigress with its cubs feeding on the elephant carcass! Obviously, the seriousness of a dreaded disease like anthrax was not understood by most of the forest officials.

Some of the forest officers again went to the press arguing that large-scale crop-depredation by wild elephants in Sonitpur had instigated the villagers to poison them. They pleaded for capturing of elephants (the villains?) and erection of electric fencing for preventing 'straying of elephants' into human habitations. But they had no solution for preventing 'straying of human beings' into elephant habitats—the real crux of the problem in Sonitpur. They also overlooked the fact that capturing of elephants in Sonitpur in the recent years had failed to give the desired result. Due to lack of planning and supervision. The contractor was permitted to pick his quota of elephants from among the calves, which were not at all contributing to crop-depredation. More than 50% of the captured elephants died soon due to lack of care and supervision. On the other hand, the older bulls were not captured since it was difficult (though not impossible) to train them. Similarly, most of the electric fencing erected in Sonitpur in the past were not effective due to poor design and lack of support and goodwill of the villagers who were to benefit from these fencings. It is, therefore, necessary that the forest officers evaluate the past strategies objectively and improve upon them rather than go on repeating the same old mistakes.

There are many lessons in the incidents of Sonitpur... It will be unfortunate if these lessons were not put to any use... It is quite obvious that the emphasis in future should be on increasing the efficiency of the forest administration...

There are many lessons in the incidents of Sonitpur for every one interested in the conservation of elephants in the NE. It will be unfortunate if these lessons were not put to any use and the same old practices continued. An evaluation of Project Elephant was also carried out last year with the help of experts in Assam, Arunachal Pradesh, Nagaland and Meghalaya. This exercise has also helped in identifying the shortcomings in the effective implementation of elephant conservation programmes in the region. It is quite obvious that the emphasis in future should be on increasing the efficiency of the forest administration. The state governments should, therefore, accord due priority to the forest departments by providing them with funds, staff, infrastructure, training facilities and political support. Encroachments in the forests should be firmly dealt with. Reforestation programmes should be given due priority.

In insurgency-prone areas, army and the paramilitary forces should be given the responsibility of protecting forests and wildlife. The central assistance should also be utilised timely and effectively. The state forest departments must also work aggressively to involve the people in the

In insurgency-prone areas, army and the paramilitary forces should be given the responsibility of protecting forests and wildlife.

conservation of forests and wildlife by implementing programmes relating to Joint Forest Management, eco-development and control of elephant depredation. They must co-ordinate with the civil administration, enforcement agencies, autonomous councils, veterinary departments, scientific institutes, NGOs, media and, in fact, with any agency that can help them.

It must be appreciated that conservation of elephants in the context of the NE does not mean the protection of just one species of wildlife from extinction. It means the conservation of the forests and the ecology of the region. It means the conservation of culture and heritage of the people. It means conservation of the life styles of the people. In the ultimate analysis, it means the conservation of the people themselves. □

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Historical records of the Javan Rhinoceros in North-East India

KEES ROOKMAAKER*

As the Indian rhinoceros *Rhinoceros unicornis* today is the dominant species of rhinoceros in West Bengal and Assam, it is not always realised that formerly both the one-horned Javan rhinoceros *Rhinoceros sondaicus* and the two-horned Sumatran rhinoceros *Dicerorhinus sumatrensis* similarly were found in parts of north-east (NE) India. However, the records are very few and confusing by their lack of detail. The Javan rhinoceros was the only species found in the Sunderbans of Bangladesh and India, and was even seen within a few miles of Calcutta around 1860 (Rookmaaker 1998). The animal became extinct there during the first decennia of the 20th century. The species was also found further north in parts of NE India, in places where today it is no longer expected to occur.

Because *R. sondaicus* was known both in the Sunderbans and in Burma (Myanmar), we would expect to find it again in the territories between these populations. It might have existed in Chittagong, as suggested by Pollock (1879) and Burton (1951), but there is not actually a single definite record which would confirm this, all rhinos caught or killed in this region having been two-horned animals.

Further north, a Javan Rhinoceros was shot near Sylhet, now in NE Bangladesh, by a tea-planter called Gordon Fraser. Wood (1930), who reported this, forgot to add a date and he could even have meant that Mr. Fraser lived in Sylhet and hunted elsewhere. Although rhinos were seen in the Cachar Hills of Assam, none have been identified as *R. sondaicus*.

The rhinoceros in Manipur seems to have been one-horned and this state could well have been the haunts of *R. sondaicus*. Higgins (1935) mentioned seeing a skull in 1913 of one shot on the Khuga River and being told that a few had been killed in the lower valley of the Barak River, near Tipaimukh. Although he thought that they probably were *R. sondaicus*, he admitted that he never had an opportunity to ascertain with certainty to what species they belonged. In 1874, a young one-horned rhinoceros was shipped from Calcutta to London, where it was bought by the

director of the Berlin Zoo. It had been caught in the district of 'Mooneypoor', an old spelling of Manipur. This animal was identified as *R. sondaicus* when it was in London, but later in life variously as *R. sondaicus*, *R. unicornis* and even as a new species called *R. jamrachii*. When she died in 1884, the zoo authorities forgot to preserve the remains. If she was actually captured in the hills of Manipur, maybe she was in fact a *R. sondaicus*, because *R. unicornis* has never been definitely found there. Zoo historians would be happy with this conclusion, but we must bear in mind that the historical distribution of the two single-horned rhinoceroses in India is still too little understood to actually be certain.

There are no records of the Javan rhinoceros further northwards in Nagaland, Tirap or even most of Assam or northern Bangladesh. However, on the western side of the range, we find the species in the northern part of West Bengal, surprisingly as this is now only inhabited by the Indian rhinoceros. There are three known records. The first is found in the authoritative *Fauna of British India* (Blanford 1888), which said that an undoubted specimen of *R. sondaicus* was shot in the Sikkim terai by Kinloch. I tend to think that



NE India and adjacent areas showing places/areas mentioned in the text
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Blanford had heard rumours, which had been distorted. Kinloch (1892) wrote about shooting *R. unicornis* in Bengal in 1878 and 1886, and would certainly have referred to *R. sondaicus* if he had a chance to find it. However, later in life, Kinloch (1904: 65) mentioned that the Javan rhinoceros existed in the Bhutan Duars 'where I once saw one shot by a friend'. Another specimen was shot by J.A. Møller from Denmark at Moraghat, in the Jalpaiguri district of northern West Bengal on 24 February 1881. It was a young female, the skull of which (missing the premaxillae and some teeth) is still preserved in the Zoological Museum of Copenhagen. Finally, Shebbeare (1953) related that J.W.A. Grieve killed one early in the 20th century in the Buxa Forest Division, thinking that it was a small *R. unicornis*, but recognized as a Javan rhinoceros when it was mounted by the firm of Rowland Ward in London. One thing makes me wonder. The Maharajah of Cooch Behar gives details in his book of 1908 how he killed 135 and injured 34 rhinos in his district between 1871 and 1904 - and none of them were identified as *R. sondaicus*.

...shot by J.A. Møller from Denmark at Moraghat, in the Jalpaiguri district of northern Bengal on 24 February 1881. It was a young female, the skull . . . is still preserved in the Zoological Museum of Copenhagen.

Most of the records given above are veiled by the passage of time. I would like to know more about those people who hunted the Javan rhinoceros in India and what happened to their trophies. May be other records will turn up in time. However, the *R. sondaicus* of Sylhet, Manipur and Bengal no longer exists, having disappeared during the first years of the 20th century.

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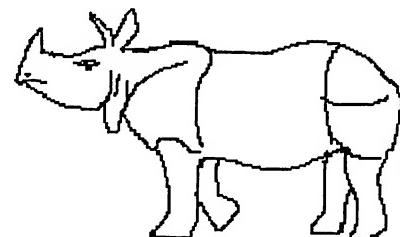
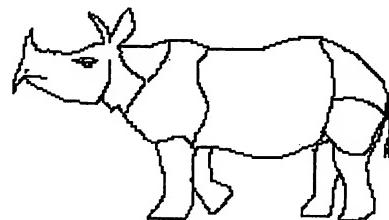
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Javan rhinoceros *Rhinoceros sondaicus* (top) and Indian rhinoceros *R. unicornis* (bottom).

Illustrations: Anwaruddin Choudhury

Tiger conservation in the kingdom of Bhutan

CHARLES McDUGAL*

Background

The Tiger Conservation Program was initiated in 1995 by the Nature Conservation Section of the Forestry Services Division with the assistance of WWF Bhutan. The first priority was to determine where tigers were found, and in what density. At the time Bhutan had no trained staff to conduct surveys. Therefore nine forestry staff were sent to Nepal and were trained by my wildlife technicians and myself for one month in tiger survey and monitoring techniques in March/April 1996 at Royal Bardia NP [NP= National Park] and Royal Chitwan NP. Karma Tsering, the Coordinator of the Tiger Conservation Program, and his assistant attended the International Tiger Field Assessment Techniques held at Royal Chitwan NP, Nepal, in March 1997. A second batch of forestry staff were trained in Chitwan shortly afterward. I worked as a WWF consultant with the Nature Conservation Section (now Division) on five occasions between 1996 and 2001.

Bhutan tiger survey

Five field surveys were conducted between 1996 and 1998 covering all dzongkags except Thimphu and Paro. In the 'Central Himalaya' region of Bhutan tigers range up to high altitudes. They typically move along the forested ridges and spurs above human habitations. Although this is sub-optimal habitat tigers breed up to 3,000 m. The forest cover is mainly broadleaf. Although wild boar and sambar

are present, tigers supplement their natural diet by preying on cattle, horses, and in some areas, domestic yaks. There have been at least 3 records of tigers reaching 4,000 m., two males and one female crossing passes.

Under these conditions, conducting a field assessment to determine presence or absence, and if tigers were present, whether or not they were breeding, was difficult. Tigers followed unpredictable routes at high elevations. Domestic livestock using the same habitat obliterated tiger sign.

Results of the survey

Tigers were widespread in the 'Central Himalayas'. This was not so in the 'Southern Foothills' where we had expected to find them in good numbers. Except for Manas and the adjoining parts of Sarpang, they were absent or found only in small isolated pockets at Gedu, Phipsoo WS [WS=Wildlife Sanctuary], and Khaling WS. No tigers were recorded in Torsa Strict Nature Reserve or in Sakteng WS.

In the areas of the 'Central Himalayas' surveyed, 12 female tigers, 10 males, and one animal of undetermined sex were recorded. Ten of the females had offspring. In the 'Southern Foothills' 15 adults were found, 9 females and 6 males. Four of these females had young. In the 'Central Himalayas' the density was 0.54 adult tigers/100 km², in the 'Southern Foothills', 2.0 adult tigers/100 km².

Tigers were found in continuously distributed between five protected areas. They range from Jigme Dorji NP, in the northwest, down through the intervening forests to Black Mountains NP and Royal Manas NP. From Black Mountains there is a further connection over to Thrumshingla NP and from there to Bumdeling WS at the northeast corner of the kingdom. Breeding tigers were found in all the above protected areas except Bumdeling.

Extrapolating from these findings for a total area of continuous potential tiger habitat of broadleaf and coniferous forests covering 10,714 km², we estimated a total of 67 to 81 adult tigers continuously distributed. This is not a total count for Bhutan, because isolated tigers in other areas were not included, only those connected by suitable habitat.



Tiger conservation strategy

A Tiger Conservation Strategy for the Kingdom of Bhutan, prepared by Karma Tsering, and myself was presented at a national workshop in May 1998. Input from the participants was incorporated in the document.

The strategy was revised in 2001 in the light of additional data. At the time of writing the authors believed there might be a connection between the tigers in Bumdeling WS in Bhutan and others thought to exist across the border in Tawang District of Arunachal Pradesh. This proved unfounded (A. Choudhury, pers. commn.). Nevertheless, Bhutan's continuously distributed tigers, although they are not connected with other tigers further east as previously supposed [there is connection between Khaling WS in Bhutan and West Kameng District of Arunachal Pradesh - Editor], there is a connection to the south and west. Immediately south of Royal Manas NP is Manas NP (the core area of Manas Tiger Reserve) in Assam. Extending westward from Manas NP are three contiguous areas, Manas RF (RF=Reserved Forest), Chirang RF, and Ripu RF. They form part of the buffer zone of the tiger reserve, although not managed as such. Their combined forest cover is approximately 1,000 km². It is a good tiger habitat consisting mainly of semi-evergreen and deciduous forest with some grassland along the major rivers. All three contain tigers. The eastern area, Manas RF, adjoins Manas NP, and it also is connected with the western end of Royal Manas NP. The western area, Ripu, is contiguous with Phipsoo (A. Choudhury, pers. commn.). Thus Phipsoo is connected to Royal Manas NP through Assam. This is an important connection, because Phipsoo is another of Bhutan's protected area where tigers are breeding. It is possible that this belt of continuous tiger habitat extends from Phipsoo up to Buxa Tiger Reserve.

Biological corridors

The strategy recommended that corridors of existing forest linking the protected areas containing tigers be protected. The Royal Government of Bhutan accepted this recommendation, with the result that biological corridors have been delimited and are in the process of being implemented.

Opportunities and drawbacks

A number of factors favour tiger conservation in Bhutan. No less than 72 % of the kingdom is still under forest, and there is a national commitment

to never allow the forest cover to fall below 60%. Bhutan's population is less than one million. There is strong political will for conservation. Furthermore, the Buddhist ethic supports nature conservation.

Finally, Bhutan's tigers are not isolated, but together with those in Assam form a large tiger conservation unit facilitating gene flow and safeguarding the future of this big cat.

Nevertheless, there are a few drawbacks. People live in all the protected areas and most tiger habitat is grazed by domestic livestock. The local people receive no direct benefit from conservation, and have no understanding of the tiger's role in the ecosystem.

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Livestock depredation study

One of the recommendations of the strategy was that the pros and cons of paying compensation for livestock losses should be investigated. Data on cases of depredation were requested from all Disional Forest Officers and protected area managers, not only cases of depradation by tigers, but by other predators also. Unfortunately the response was not sufficient to provide reliable data for the majority of the kingdom. Therefore we used samples from 5 areas were the information was reasonably complete. These were:

Gasa Dzongkhag (Jigme Dorji NP)
Thimphu Forest Division, Toeb Gewog
Black Mountains NP
Thrumshingla NP
Bumdeling WS

Of the total 714 domestic livestock, yaks, cattle, sheep/goats, and horses, killed in all the samples, only 90 or 12% were killed by tigers. Most were killed by canids (wild dogs and wolves), leopards, and bears, in that order of importance. Tigers killed domestic livestock in all five areas, but they ranked as the number one predator only in Bumdeling, and were the number two at Black Mountains. They ranked last in the other three areas, namely Gasa, Thimphu, and Thrumshingla. Tigers killed cattle,

horses, and sheep. Although in these samples there were no cases of tigers killing domestic yaks, in 1996-97 we recorded 45 yaks killed by tigers in Bumthang Dzongkhag, and we estimated that they probably kill at least 50 there annually. In Bumthang tigers are frequently found over 3,000 m. in very sub-optimal habitat. There yaks are an important supplement to natural prey consisting mainly of wild pigs and sambar.

The results of the livestock depredation study were presented at Forestry Services in Thimphu in May 2001. The number of livestock killed per annum was much higher than expected, and any plan to pay compensation directly has been shelved in favor of finding ways to compensate the losses directly by providing other benefits.

Conservation Awareness

Since 1998 there has been an active program to increase public awareness about the tiger's importance to maintain the balance of the ecosystem and the need to conserve this key predator. This program works in collaboration with the Royal Society for the Protection of Nature and also the school system. It also seeks to involve the monasteries in conservation education. Programs on radio and TV, as well as posters inform the public about the importance of saving tigers. □

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Amphibians of Northeast India

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Amphibians are poorly studied group in this part of India. There were only about 54 species known till a few years back (Chanda 1994). Studies carried out during the last few years have added more species including new discoveries and the total is now around 80 (Dutta, 1997; F.Ahmed, unpub). More than 4000 species of amphibians are known in the world. Out of which about 225 are found in India. The north-eastern region is home to about 25 endemic species of frogs and new species are being added almost every year.

The study on amphibians in this region was started by Anderson (1871) and Boulenger (1890). A monograph was produced by Chanda (1994). Other noteworthy works were of Annandale (1912-1915) and Pillai (1973-1979).

The current wave of amphibian research started only in late 1990s. I started work on this group during 1997-1998. Extensive surveys were carried out in Orang National Park during 1997-1999.

The results from Orang were exciting! Briefly, three species new to science, one range extension and one rediscovery after a gap of more than 85 years were the highlights. Altogether 19 species have been recorded from the park (Ahmed & Dutta, 2000; Dutta et al, 2000; F. Ahmed, unpub.). Out of the three new species, *Kalophryne orangensis*

Dutta, Ahmed & Das 2000, was also a new genus to India. Other two species (*Kaulola* sp. and *Microhyla* sp.) are in the process of scientific description.

The Smithsonian Institution, USA supported a short-term study for nine poorly known endemic amphibians of the region. Surveys carried out in



Mohd. Firoz Ahmed

The newly discovered *Kalophryne orangensis* in Orang NP.

and around type localities of these species in Assam, Arunachal Pradesh and Meghalaya had resulted in rediscovery of five out of nine species after a gap of nearly 85 years and also discovery of a few new species, which are still in the process of description (Ahmed 2001).

The results from Orang . . . three species new to science, one range extension and one rediscovery after a gap of more than 85 years.

The study also revealed that a species of caecilian (limbless amphibian), *Gegenophis fulleri* discovered by A W Alcock in 1904 from Silchar in Barak Valley, has perhaps became extinct (!) from the region mainly due to destruction of evergreen forests through felling, encroachment and tea plantations.

Many amphibians are specialized for some specific habitat and destruction of such habitat may cause loss of a species forever before being discovered. It has been observed in some abandoned jhum fields that a few species do not return to the regenerated forests although they were hardly 50 meters away. However, a few species may return but the reduction of jhum cycle from 10 to 3-5 years has reduced the chances of such return.

Besides forest destruction, rampant use of chemicals like fertilisers and pesticides has lead to an alarming decline of amphibians all over the world. We must come forward to save these species, which are indicators of an ecosystem.

The results of Orang survey (three new species of frogs in just one monsoon!) prompted me surmise

as to what could be there in the large contiguous and pristine forests of this region! This reminds me of the vast task ahead of us.

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Big cats, Elephant, Rhino and Gaur in Guwahati

ANWARUDDIN CHOWDHURY

Guwahati, the capital city of Assam is also an important wildlife area with records of globally endangered 'mega' species such as the tiger, leopard, elephant, rhinoceros and gaur. Although bulk of the natural habitat has been lost, the leopard and elephant still occurs in parts of the city while the tiger, rhinoceros and gaur just outside. Perhaps no city in the world has such record. Time has come to conserve whatever is left within the city limits and its immediate environ for posterity.

Introduction

Guwahati (26°05' - 12°N, 91°35' - 52'E), the capital city of Assam in northeastern India has the unique

distinction of having records of a number of 'mega' wildlife species, which are also globally endangered. Located on the floodplains of the Brahmaputra

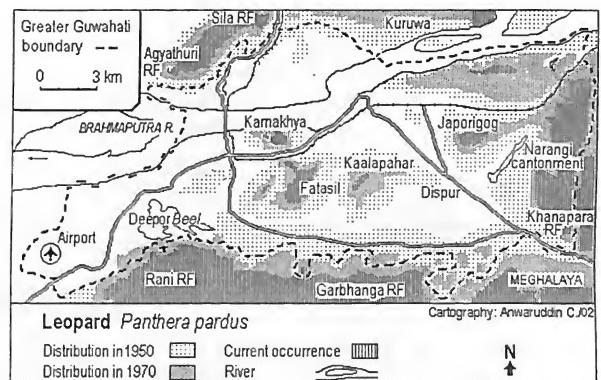
river, a few hilly outcrops of Shillong Plateau provided higher grounds (elevation ranged from <50 to >250 metres above the mean sea level). This largest city of northeastern India has witnessed a phenomenal growth between 1971 and 2001 during which its area shot up from 44 to 217 km² and population from 0.20 to 0.81 million, an increase of 400% ! This rapid expansion has resulted in heavy destruction and encroachment of natural habitat. Many species of mammals and birds have vanished from the main city but still holding on in the vicinity awaiting extinction from the area. This rich diversity of biological wealth in a big city of nearly a million human population was not focussed to the outside world as it should have been.

I here summarise the records of five 'mega' mammals – tiger, leopard, elephant, rhinoceros and gaur in and around Guwahati – a city where I lived for more than two decades.

Tiger and Leopard

The tiger *Panthera tigris* still strays into the city hills including those in the north bank. Till 1970s, a few were always met with in Kaalapahar, Fatasil Ambari, Kahilipara, Panjabari, Khanapara, Agyathuri, Sila, Mandakata, etc., hills in and around Guwahati. Stray animals were encountered in the hills of Kaalapahar-Fatasil Ambari even in early 1990s. Two tigers were reported from the hills near Changsari in 1998 (Choudhury 1999b). Once common in Garbhanga, Rani and Amchend Hill RFs [RF = reserved forest], this big cat is now only occasional in those areas.

The leopard or panther *P. pardus* had a wider distribution in the city and occurred in all the hills including Sarania till 1950s. Its extent has remained fairly large but the numbers have come down to a handful and has become highly fragmented. Fatasil Ambari, Kaalapahar, Kamakhya, Kahilipara and the

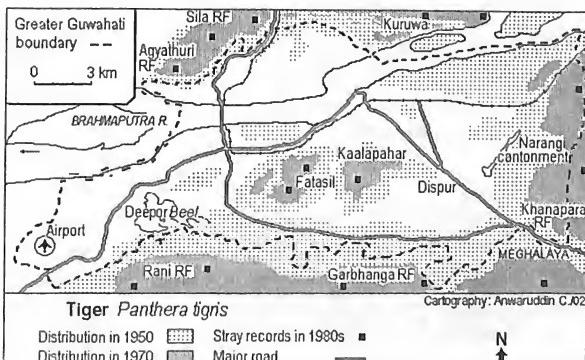


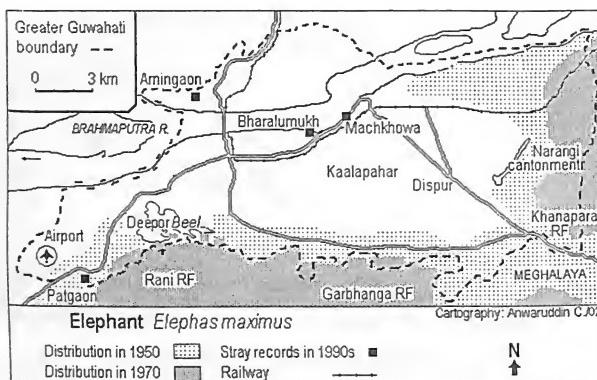
hills on the north bank still has survivors. It is not uncommon in Amchend Hill RF and the adjacent forests from where it moves into Khanapara, Narangi, Noonmati areas. Garbhanga and Rani RFs also have panthers.

A leoprad had strayed into Odalbakra area of the city and fell into a well in December 1997, then a year later, another fell into a well while chasing a dog in Birubari in December 1998. Both were rescued. Prior to that another animal which had strayed into Ulubari area was killed by some policemen on 5 March 1995. Three cubs were caught by locals near Fatasil Ambari on 11 April 1998. One was poached in Dirgheswari hills near North Guwahati on 31 May 1998. A large specimen stopped vehicles for about 10 minutes shortly after midnight when it came out of Nilachal (Kamakhya) Hills on 26 February 1998. More than a dozen leopards were rescued from different parts of the city during the last two decades.

Elephant

Guwahati is perhaps the only metropolis where the wild Asian elephant *Elephas maximus* still occurs within city limits. The pachyderms from Amchend-Panikhaity areas regularly move into Narangi cantonment, Khanapara RF near Panjabari and other areas of eastern part of the city (Choudhury 1999). A female and her calf fell into a reservoir in Narangi cantonment on 9 June 1999, both were rescued. Earlier (till 1970s), they used to come down to Hengrabari (Silsako) beel through Narangi and Panjabari but now it has stopped due to settlement but they still visit Khamranga beel. Even in 1950s, elephants from Amchend area used to move up to the hills near Chandmari -Nunmati area of the city. The other population is found in Garbhanga and Rani RFs from where they come down to Deepor beel.





and in the fields near Borjhar, mainly in winter. Till early 1980s, they also used raid crops all along the southern edge of the city. An adult and a calf were electrocuted near Deepor beel on 7 June 1999. A herd of about 40 came down to the fields near Patgaon, visible from the main road to the airport in November 1999. Two persons were trampled to death in Moirapur and Cholli of western part of the city in December 1999.

There were also a few stragglers from other areas. A makhna was washed down through the Brahmaputra and had entered the city at Machkhowa on 29 August 2000. It damaged a few vehicles near the idgah then again went down to the river. Then it crossed over to Amingaon and remained for some time in a beel. After a few days it crossed over to the south bank and vanished in the forests of Rani RF. Prior to that a tusker was washed down, which was then caught with the help of trained elephants at Bharalumukh.

Rhinoceros

Till 1970s, there was a small but permanent population of the Indian one-horned rhinoceros *Rhinoceros unicornis* in Kuruwa, at the northeastern edge (across the river) of the city. Stray rhinos from Pabitora occasionally visit the chaporis of the Brahmaputra towards northeast of the city. At Tatimora chaporis stray rhinos were regularly seen (Choudhury 1996).

Gaur

A population of gaur or Indian 'bison' *Bos gaurus*, locally called as 'Methon' still occurs in Amcheng RF towards east of the Guwahati city (Choudhury, in press). Till early 1970s, the species used to move up to Bonda, Narangi, Noonmati and Panjabari

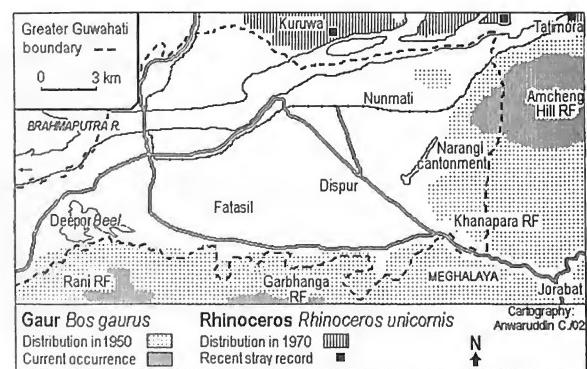
areas, however, expansion of habitation and loss of forest has forced the animals to move deeper in Amcheng hills. Still it is a privilege for a metropolis that the majestic gaur is only a few kilometres away from its eastern boundary! There are a few gaur survivors in Garbhanga and Rani RFs but there is little chance of coming nearer to the city due to habitat loss and human activities.

Conservation problems

Being a fast-growing city, the foremost issue was destruction of natural habitat for habitation, fuelwood, as well as through illegal felling. Poaching was not a problem as such although a few leopards are still being killed occasionally but not for trade. Construction of refinery at Nunmati and setting up of large cantonment at Narangi, both in the eastern part of the city was the initial blow to the wildlife and their habitat in that part. The elephants still enter the cantonment almost every year and often raid the godowns looking for grains. The hills on the north bank of the Brahmaputra such as Agyathuri-Mandakata, which became famous in 1970s for their man-eaters, were entirely deforested through illegal felling and stone collection. The reserve forests of Garbhanga and Rani have also experienced large-scale felling and encroachment. The Silsako or Hengrabari beel, the virtual storage of flood waters in that part of the city has been reclaimed to a great extent. Whatever is left is going to be filled up soon to accommodate housing and even government offices as well as a sports complex. This was a major haunt of the wild elephants a few decades back.

Discussion

The destruction of natural habitat, especially near-complete deforestation in the hills and filling up of vital wetlands had its impact on Guwahati.



Even a normal spell of rain floods the streets [result of filling up of wetlands] while the drains get filled up with silt [result of deforestation and earth cutting in the hills]. The situation is worsening year after year. While complete recovery is impossible, there is scope for 'repair'. One wonders why enforcement is so difficult in a capital city!

There are at least 16 reserve forests and proposed reserve forests that are within city or very near to it covering more than 380 km². While restoration of ecology of Guwahati and its environ is for the betterment of its nearly a million human population, the presence of splendid natural features with key wildlife species has tremendous potential for ecotourism. The Nairobi National Park at the edge of Kenya's capital city is visited by many thousands every year. Very few cities have such opportunity and Guwahati was one such but it was never given any serious thought.

Recommendations

1. Massive afforestation in the hills within the city as well as just outside. Wherever possible, encroachments should be cleared. These should be adequately protected. Leopards are still found in many of these hills.
2. The remaining wetlands including Silsako or Hengrabari *beel* should be preserved as wetland and further reclamation stopped.
3. Amcheng Hill RF, South Amcheng RF and some adjacent areas with a corridor to Khanapara RF should be declared a wildlife sanctuary with an eye on its elephant and gaur.

Book Reviews

(Reviewed by the editor)

1. PRIMATES OF NORTHEAST INDIA, by Arun Srivastava.
Published in 1999 by Megadiversity Press, Bikaner. (21.5 x 14 cm), pp. 208. Price Rs 250, \$ 25.

The northeastern (NE) India comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura has the highest primate diversity in India with nine species. A sizeable amount of work has been done on the primates in this region, however, more long-term research is required in view of fast changing scenario arising out of habitat loss and poaching. I was happy to have a copy of Dr Srivastava's book as I thought that the existing gap

4. Eco-tourism should be developed in a big way in all such areas. A small part should be developed as 'picnic spot' in some of these areas as it is a very popular form of domestic tourism. Eco-tourism will also give employment to many. Kamakhya Hills may also be considered for a sanctuary on the line of Tirupati. The existing Deepor *beel* Sanctuary should be extended to cover some areas of Rani RF.

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- 2000. *Panthera tigris* in North East India. In: *Royal Bengal Tiger in the 21st Century*. Pp. 61-77. Vision Publications Pvt. Ltd (on behalf of Nature Environment & Wildlife Society), Calcutta.
- in press. The distribution and conservation of the gaur *Bos gaurus* in Indian Subcontinent with special reference to the north-east India. *Mammal Review* 32:.

[Post Script. Eviction to clear city's reserve forests of encroachments has already started in May 2002 and the bulk cleared. It was a welcome development but to prevent re-encroachment, adequate measures should be taken including formation of joint monitoring committees with leading citizens and NGOs since pressure on forest land in urban areas is usually very high.] □

PRIMATES OF NORTHEAST INDIA



Arun Srivastava

in our knowledge might have been narrowed down a bit. The book started with a rather long foreword by Charles Southwick followed by preface and acknowledgement. The history and state profiles of northeastern India was dealt with in 29 pages, which was perhaps unnecessary for a book on primates. The chapter on primate food and common trees contain some neat and well-made drawings although they may not be of any use. The main chapter that deals with the primates of the region started from page 117 and each species description is accompanied by a distribution map and an illustration showing the species although no illustrator's credit was given. The reference at the end contained listing of 195 books, papers, etc.

I went through the book with keen interest but was greatly disappointed when I could detect some serious errors, which did not seem to be bonafide mistakes but *faux pas*. In any work of this nature, there is possibility of many bonafide mistakes, which could be rectified in subsequent editions. The main problem in this work, which is evident from the maps and text, is that it neither reviewed most of the relevant literature nor was the result of any detailed fieldwork nor was there proper home work. Zoogeographic complexities have made *faux pas* very difficult in northeast India, for e.g., the river Brahmaputra and many of its tributaries such as the Dibang, Manas and Sankosh are effective barriers in dispersal of many mammals, especially primates.

Here are some examples of serious *faux pas* in Dr Srivastava's book. The capped langur *Trachypithecus pileatus* does not occur between the Siang and the Dibang rivers in Arunachal Pradesh but the map on p. 163 shows as many as three sites in that region! What was the basis or source of these? There was no indication as to whether it was author's own observation or other sources. This area is a 'no langur zone' and so far none were sighted. If any sighting is made then it should be highlighted with specific data as it would be a very important record. Even in China (Tibet), no langurs were recorded immediately to the east of Yarlung Zangbo (Siang or Brahmaputra) (George B. Schaller, pers. comm.).

Phayre's leaf monkey *Trachypithecus phayrei*'s northern limit of distribution in Assam is the Barak river but the map on p. 168 shows that it occurs beyond even reaching Meghalaya border! The author did not show the Barak river but the site

shown was too apparent as well beyond (the northernmost site shown on the map). The range of *T. phayrei* in Assam was already mapped (in reputed journals such as that of Bombay Natural History Society) but the author did not review those.

*"...greatly disappointed when I could detect some serious errors, which did not seem to be bonafide mistakes but faux pas ...
Zoogeographic complexities have made faux pas very difficult in northeast India,"*

So far there is no record of the rhesus macaque *Macaca mulatta* in the higher areas of western Arunachal Pradesh such as Tawang district and upper areas of Kameng. The published records from Tawang were misidentification of Assamese macaque *M. assamensis*. Unlike other parts of Arunachal Pradesh where primates are hunted for food, *assamensis* is common all over Tawang and Kameng due to local tradition (the Monpa tribe do not kill primates). But on the map on p. 143, rhesus macaque was shown to occur in Tawang and upper areas of West Kameng (two dots each). What was the basis for these locations?

At p. 156, the distribution of golden langur *T. geei* did not show Chakrashila Sanctuary or the other nearby locations totalling more than 10, i.e., not even a single dot put for more than 10 sites. Rather Dhubri township of about 80,000 (64,000 in the main town) human population was shown as an isolated location! These serious *faux pas* would put question mark on other maps also although those remained undetected as the sites were within the known range thus giving 'benefit of doubt' to the author.

In the text, perhaps the most serious anomaly was observation on feeding profile and home range of Phayre's leaf monkey in Murlen National Park, Mizoram (p. 167-168). Who has observed it in Murlen? My last visit to Murlen was in February 2001. So far no observer has recorded it within the park although I could confirm its presence this time outside in the lower river valleys. The forest officials and staff who had accompanied all the survey trips (only a handful of trips hence they

easily remember) including that of the author's in Murlen since 1994 (it is mandatory to take authorised forest staff) did not report of Phayre's leaf monkey. Other observers on specific survey for this species also could not confirm (Joydeep Bose, recipient of a National Geographic Society's Grant for study of *T. phayrei*, pers. commn.). How the author could observe even feeding and home range when the presence of the species itself inside the park is yet to be established? Anon (1994-99, Indo-US Primate Project Annual Reports, No. 1 to 5. Department of Zoology, JNV University, Jodhpur), which forms the main basis for this book as was evident from its 'foreword' and 'preface' chapters also did not mention of sighting of *phayrei* in Murlen. The park is a high elevation area with most parts above 1000 m (up to >1600m) but on p. 167 it was mentioned that the leaf monkey occurs up to 800 m only. Thus the author himself has ruled out its presence in areas above 800m whereas the park is higher. Then how could it occur in Murlen? He forgot to tally his own figures. I think this was a serious *faux pas* in the text putting a question mark on other facts in the text.

"How the author could observe even feeding and home range when the presence of the species itself inside the park is yet to be established?"

It was clear from Anon (1994-99) that no field survey was carried out in Manipur but the maps show some localities. What was the source of these? No mention in the text or even in the reference section of any published works.

Other noticeable errors apart from too many spelling mistakes were the conservation status of different species according to the Indian Wild Life (Protection) Act 1972. Perhaps the author did not actually consult the Act. The stump-tailed *M. arctoides*, Assamese and pig-tailed macaques *M. nemestrina* are protected under Schedule II [part I] and not Schedule I (pp. 135, 140, 150 respectively). The map on forest type on p. 53 and the accompanied text on pp 51-54 was horrible. Subtropical pine forest shown even near Guwahati city! In the Himalaya, the temperate forest areas have been shown as subtropical and vice-versa.

In such a regional work, the distribution should be dealt with in greater detail. For e.g. the stump-tailed and pig-tailed macaques are confined to

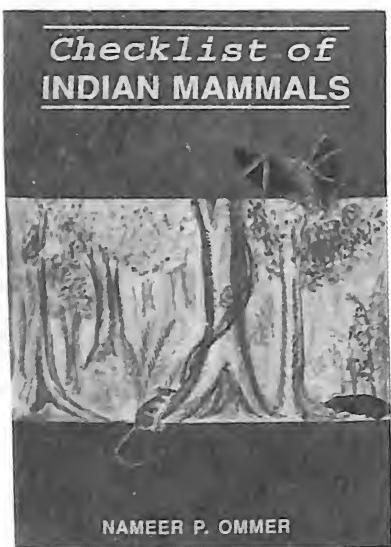
easternmost corner of Arunachal Pradesh and not in the rest. By mentioning only the name of the state, the hollowness in field survey was exposed and the readers were left to guess. About 30 pp (pp. 85-116) devoted to food trees was rendered useless as there was no mention as to which part is actually taken by the primates. Huge introductory chapters were also outside the scope of this book, these could have been restricted within 20-30 pp instead of present 116 pp (more than 50 per cent of the book!).

It seemed to be a hurriedly put-together work with no adequate review of existing literature, no cross checking, no proper fieldwork thus unsuccessfully attempting compensation through serious *faux pas*. There was not even proper cross-checking of facts incorporated in the text itself (e.g., Phayre's leaf monkey's status as per Wild Life [Protection] Act 1972 has been mentioned as Schedule I on p. 169 but as '?' on p. 186 [Table 8.1]. In the same table, the status of primates mentioned at pp. 135, 140, and 150 was contradicted that too wrongly, 'part I' not mentioned). On p. 137, in para 2 it was mentioned that the Assamese macaque occurs up to 4000 m elevation but in the next para on the same page it was contradicted by stating that it inhabits up to 3800 m. On p. 147, para 2 says that the pig-tailed macaque occurs up to 1200 m altitude but the next para says it is up to 1700 m! Which one is correct? Author's homework was apparently very poor.

Every book has its value despite drawbacks but in this one by Dr Srivastava, which contained serious mistakes and *faux pas*, the readers may find it difficult to pin-point as to which part is free from such discrepancies so that something useful could be 'deciphered'!

". . . mentioned that the Assamese macaque occurs up to 4000 m elevation but in the next para . . . it was contradicted by stating that it inhabits up to 3800 m. . . . that the pig-tailed macaque occurs up to 1200 m altitude but the next para says it is up to 1700 m! . . . readers may find it difficult to pin-point as to which part is free from such discrepancies so that something useful could be 'deciphered'!"

2. CHECKLIST OF INDIAN MAMMALS, by Nameer P. Ommer. Published in 2000 by Kerala Forest Department. Thiruvananthapuram. (22 x 14 cm), pp. 90, xxvi. Price not mentioned.



The Checklist of Palaeoarctic and Indian Mammals, 1758 to 1946 by Ellerman and Morrison-Scott was published in 1951 and a revised edition in 1966. Then after a rather long gap appeared The mammals of the Indo-malayan Region: a systematic review by Corbet

and Hill in 1992. Thereafter, Wilson and Reeder edited a volume in 1993 covering the entire world. However, a checklist covering only the Indian mammals was not there and the one by Ellerman and Morrison-Scott was also outdated. The book by Nameer Ommer has attempted to fill this gap to some extent. This book although small has covered almost all the species with their vernacular names and brief geographical range. A brief history of Indian mammalogy is there in the introduction. The bibliography contained 11 pages followed by index.

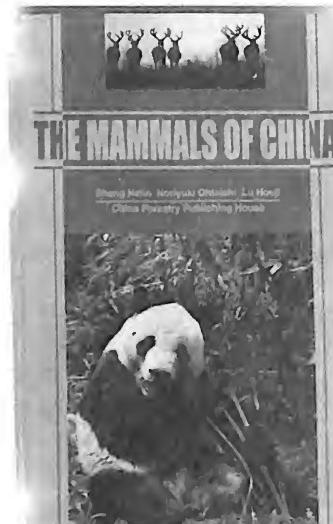
By and large, the book could meet its objectives. The main problem in the book is that for a checklist of Indian mammals, the literature search should have been many more. However, the serious omissions were that the author did not cross check places and their latest administrative status. For e.g., Naga Hills became a separate state in 1961 but he still put it as a part of Assam, even after four decades (p. 2, *P. leucura*)! So was the case of Meghalaya (separated from Assam in 1972).

Some other notable mistakes were as follows. The red panda does not occur in Assam (p.31). The golden cat is not confined to Sikkim and Assam but also other northeastern (NE) states (p. 38). Tibet is not in India, in fact eastern Ladakh is part of Tibetan plateau (p.39). The kiang occurs only in Sikkim and Ladakh area of Kashmir and not in 'other' parts of Kashmir (p.49). The musk deer does not occur in Assam (p.52). Similarly, mithan is also

found mostly in other NE states rather than only in Assam (p.53). Takin also does not occur anywhere in Assam (p.56). The serow is not absent in the entire NE India (mentioned as found only west of Sikkim). It is still common over greater part of the hills all over (p.57). The red goral also does not occur in Assam (p.57). The Chinese pangolin also occurs in the Himalaya in NE India. In fact it is the only pangolin of the Eastern Himalaya (p.59).

Since this publication is intended to be a standard reference, these discrepancies need to be corrected may be as a revised edition. □

3. THE MAMMALS OF CHINA, by Sheng Helin, Noriyuki Otaishi, & Lu Houji. Published in 1999 by China Forestry Publishing House. (21 x 12.5 cm), pp. 297. Hardbound. Price not mentioned.



This nice 'small' book is well produced and is a handy guide to the mammals of a big country such as China. Almost all the species has been listed while a few representative species were treated with description, colour photographs and a map. At the end, index of both Latin and common English names have been given.

The book seemed to be very useful for anybody interested in Chinese mammals but is also very much relevant for Himalaya and northeastern India. The photographs were reasonably well reproduced. But the main discrepancy was the complete lack of any reference not even the basic ones. Other errors noticed were: *Semnopithecus entellus* does not occur near the Tsangpo bend as the published records were found to be misidentified *pileatus* (map on p.60); the photograph of *Hylobates hoolock* on p. 63 (below) was not accredited; banded linsang shown as spotted linsang on p.111 (above); *Muntiacus crinifrons* occurs more widely even up to Myanmar (map on p. 178). Despite these minor drawbacks, the book will be very useful for the region. In fact a similar book on the Indian mammals is long overdue. □

Note**Notable bird records from Digboi**

KULOJYOTI LAHKAR*

A bird survey in the tropical evergreen forests of Digboi oil fields, Kakojan RF (RF = Reserve Forest) and Upper Dihing (east block) RF (UD-EB RF) in eastern Assam's Tinsukia district was carried out in 2000-2001. I here report some notable birds sighted during the survey.

White-bellied Heron *Ardea insignis* [1 near 'DLB', 5 February 2000]; Chinese Pond Heron *Ardeola bacchus* [1 in 'DLB', 6 October 2000]; Ferruginous Duck *Aythya nyroca* [in 'DLB', 30+ in February 2000]; Bonelli's Eagle *Hieraetus fasciatus* [1 in UD-EB RF, 4 October 2000]; Greater Spotted Eagle *Aquila clanga*. [2 in Digboi, 6 February 2000]; Long-billed Vulture *Gyps indicus* [in flight]; White-backed Vulture *Gyps bengalensis* [in flight]; White-legged Falconet *Microhierax melanoleucus* [1 in UD-EB RF, 3 October 2000]; White-cheeked Partridge *Arborophila atrogularis* [call heard, UD-EB RF]; Bamboo Partridge *Bambusicola fytchii* [1 in UD-EB RF on 6 October 2000]; Grey-headed Lapwing *Vanellus cinereus* [outside UD-EB RF]; Golden Plover *Pluvialis apricaria* [5, outside UD-EB RF, 5 October 2000]; Purple Wood or Pale-capped Pigeon *Columba punicea* [singles, Digboi, 6 February and UD-EB RF, 4 October 2000]; Malay Fish Owl *Bubo ketupu* [1 in outside UD-EB RF, 15 December 2000; only the second record for India]; Blyth's Kingfisher *Alcedo hercules* [in 'DLB', 1 each on 6 October, 15 December 2000, 14 January 2001]; Brown Hornbill *Ptilolaemus tickelli*. [7-9 in UD-EB RF and Digboi, 28 December 2000]; Rufous-necked Hornbill *Aceros nipalensis*. [6-7 in UD-EB RF and Digboi, 14 January 2001]; Crow-billed Drongo *Dicrurus annectans* [1 in UD-EB RF, 5 October 2000]; Austen's Spotted Babbler *Stachyris oglei* [UD-EB RF, 7-8 October 2000, 13, 14 January 2001]; Chestnut-backed Laughing-thrush *Garrulax nuchalis* [UD-EB RF].

Acknowledgments Birdlife International, Royal Society for the Protection of Birds, Bombay Natural History Society, Wild Bird Federation Taiwan [for a small grant under Important Bird Area programme], A. R. Rahmani, Farah Ishtiaq, Anwaruddin Choudhury, P. C. Bhattacharjee, M.C. Malakar, Y. Suryanarayana and Mridu Phukan. □

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Briefly (continued from p. 6)**A new flying squirrel for India**

The giant flying squirrel *Petaurista nobilis singhei* was known only from Bhutan. Recently specimens were examined in West Kameng district of Arunachal Pradesh. This is the first record for the subspecies *singhei* in India, and the first record for the species *P. nobilis*, in northeastern India. This colourful animal is rich orange-buff or rich brownish-buff with blackish tail-tip. The saddle is a rich maroon-brown. The length of the head and body ranges from 47 to 69 cm while that of tail, 51 to 61 cm (Source: Choudhury, A. 2002. *Petaurista nobilis singhei* — first record in India and a note on its taxonomy. *Journal, Bombay Natural History Society* 99(1): 30-34).

Gharial captured in Guwahati city

An immature gharial *Gavialis gangeticus* was accidentally trapped by fishermen in the Brahmaputra river near Amingaon in Guwahati city on 13 May 1999. It was then rescued and taken to zoo where it is still surviving. It measured 1.45 m and weighed about 7.5 kilo. The gharial has become extremely rare in the entire Brahmaputra river system and sightings are few and far between. This record had indicated that sporadic breeding still takes place somewhere in this river system.

Bears killed

At least two bears *Ursus* spp. were killed in different parts of Assam since October 2001. The specific identity of these could not be ascertained as both Himalayan black *U. thibetanus* and sloth *U. ursinus* occurs in these areas. In the first case, a carcass was found in Kahitema Beat area of Manas National Park on 9 October 2001. It was shot by poachers for its bile, teeth, tongue and nails. The second case was recorded in Naharjan tea garden, Golaghat district in end April-early May 2002. The bear had injured a few people before it was killed in retaliation. Its meat was distributed among villagers for consumption. In both the cases, no proper follow up was taken by the concerned authorities, which indicated that the state governments of this region must chalk out an action plan as there are many unreported poaching of bears all over for their bile and gall bladder, which are in great demand for traditional Chinese medicine. □

S.O.S. Golden Langur

ANWARUDDIN CHOWDHURY

The golden langur *Presbytis* (=*Trachypithecus*) *geei* is threatened due to habitat loss and poaching. In India, its entire range is restricted by the rivers, Brahmaputra in the south and its tributaries, the Manas and the Sankosh towards east and west respectively. Inside Bhutan, however, its east west spread is more and is also wellsecure as its habitat is still large and contiguous and large populations are there in protected areas.

When it was discovered by E. P. Gee in early 1950s it was believed to be confined along India-Bhutan border only. However, it is apparent from its present extent of occurrence (see map) that it had wider distribution in undivided Goalpara, currently Bongaigaon, Dhubri and Kokrajhar districts (not found in present Goalpara district).

Threats

The golden langur is in real danger. Never before had it faced such dangers – from rapid loss of habitat, occasional poaching and accidental deaths. Chirang RF (RF-reserve forest) of 593 km² has lost 200+ km² during the last decade, in fact c. 100 km² in 1997-2000! Areas such as Bismuri and Karigaon, which were well inside Chirang RF has no forest cover left. All other habitats including Chakrashila Sanctuary are also threatened by illegal felling.

Although the local tribes, mostly Bodos normally do not kill the langurs but some youths have taken up for its meat. It has been reported that contact with the Nagas was the reason for this new food habit. Still such killing is not very significant in larger habitats but in smaller and heavily degraded areas. Quite a good number of langurs, singly, in twos or in small groups have taken shelter in the village woodlands comprising of bamboo brakes with some trees, especially near Bismuri and farther north. These langurs have no future and are slowly vanishing through killing for food or are killed by domestic dogs while crossing clearings. These stranded' langurs have even developed crop raiding habit thus inviting more trouble from the farmers (Bablu Dey, pers. comm.). A local NGO has directly observed killing of at least four langurs for food in 1995 (Source: Green Heart NGO). Food shortage is apparent in areas such as Abhoya rubber plantation where the langurs have started feeding on rubber seeds as fewer natural food trees are left.

The distribution of the golden langur in 1970s and

the subsequent fragmentation have been shown on map (facing page) while table 1 lists the fragmented habitats that numbers at least 19, which was originally a single habitat. Except for Manas, Ripu and to some extent Chirang, the remaining populations have no link with the larger and more secure Bhutanese populations.

Actions . . .

Of these 19 fragmented populations, except for first four (table 1), remaining have less chance of long-term survival. There is urgent need to stop encroachment and felling. All post-1990 encroachments should be evicted. The remaining forest in Chirang, Ripu and Manas RFs, and Bhairab Pahar-Nakkati should be brought under protected area network. Chakrashila Sanctuary should be extended to include adjacent areas such as Katrigacha, Nayekgaon, etc. Isolated langurs, e.g., in Sarpamari and Srigram RFs, which have no future, should be relocated in larger areas such as Chakrashila, Manas, Chirang (Choudhury 2002). In Kakojana, Nayekgaon, etc., massive plantation should be done. Since this is the only golden langur area in India, these steps should be taken urgently.

REFERENCES

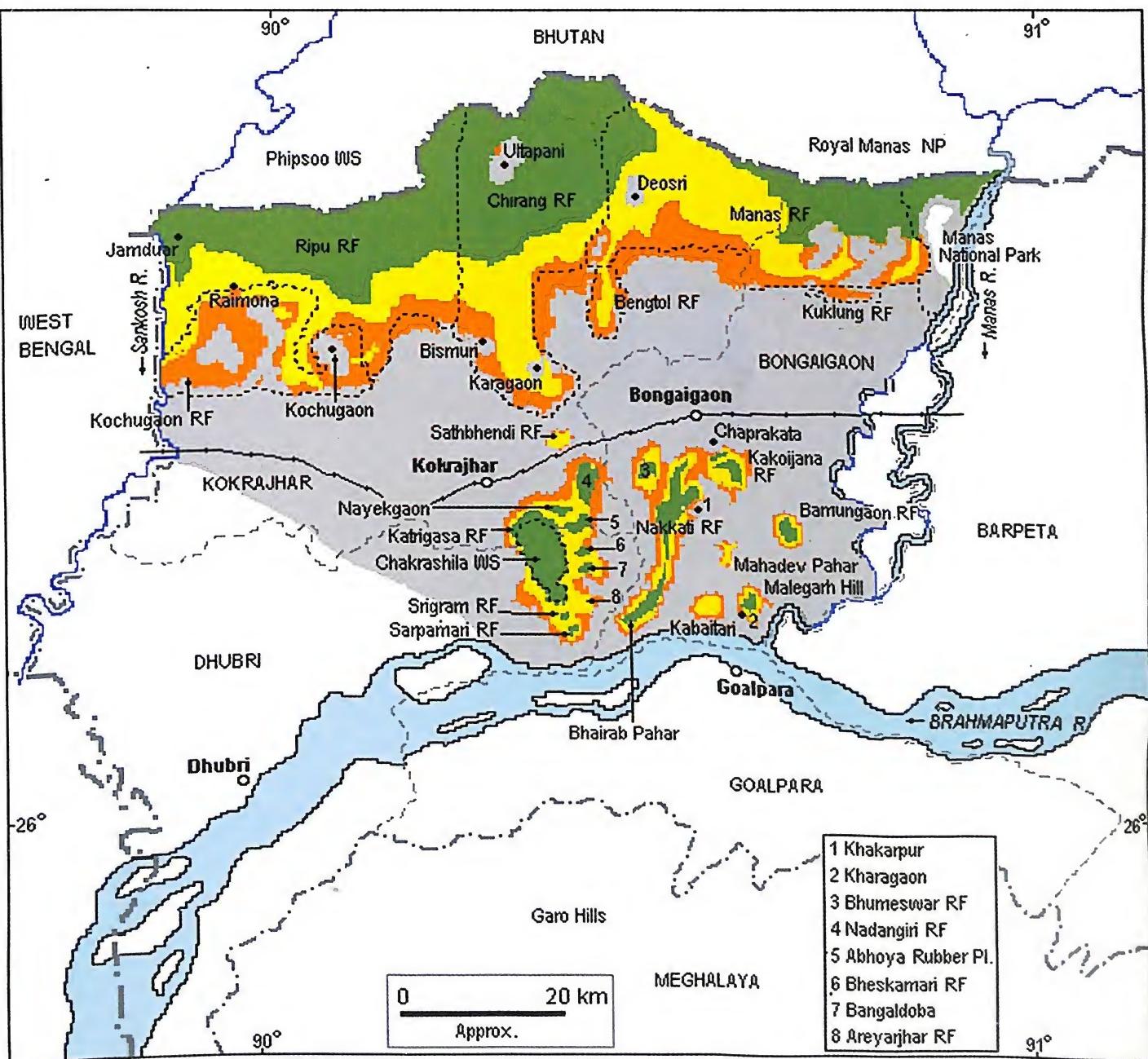
Choudhury, A. U. 2002. Golden langur *Trachypithecus geei* threatened by habitat fragmentation. *Zoo's Print Journal* 17 (2): 699-703.

Table 1: Fragmented habitats of the golden langur

1. Chirang RF-Manas RF (part) .
2. Ripu RF-Kochugaon RF
3. Manas National Park (part)-Manas RF (part)
4. Chakrashila Sanctuary
5. Bhairab Pahar proposed RF
6. Nakkati RF
7. Kakojana RF
8. Bamungaon RF
9. Abhoya rubber plantation
10. Nayekgaon proposed RF
11. Nadangiri Hills RF
12. Khakarpur proposed RF
13. Malegarh Hills (Kharagaon proposed RF)
14. Katrigacha RF
15. Srigram RF
16. Bengalduva RF
17. Sarpamari RF
18. Bhumeswar Hill proposed RF
19. Bheskamari RF

Approximate habitat suitable for the langurs = 950 km²

Approximate population of the langurs = < 2000



Golden Langur
Presbytis (=Trachypithecus) geei

Approximate original range

Distribution in 1970

Distribution in 1990

Present concentrations

Boundary, International

" , State

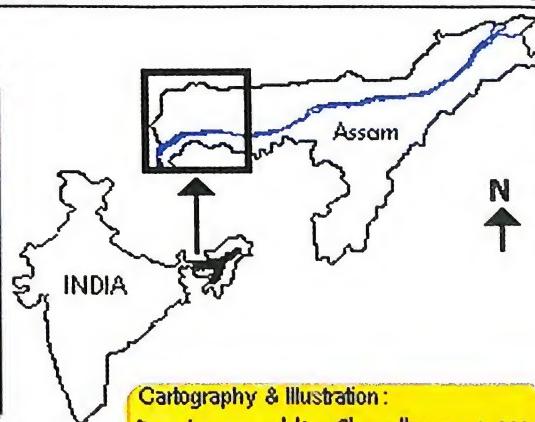
" , District

" , Reserved Forest

District Headquarters

Other Places

Rivers



Cartography & Illustration:
Dr Anwaruddin Choudhury 4.2002

Feedback ...

...Another thing that I mentioned in my letter is that I would like to acquire copies of Nos. 1 and 2 of the Newsletter of The Rhino Foundation, if available, so that I can have a complete run of this interesting and important publication.

Jack Fooden

Field Museum of Natural History, Chicago,

...Got the newsletter and was VERY PLEASANTLY surprised to find no mistakes in the text. My appreciation to the proofreader/ editor.

Ashok Captain

Pune.



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